

Work Order ID 144436

April 18, 2016 9:48:34 AM

144436

To ship complete
May 6

Page 1

Item ID: D4766-041

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Skidtube Assembly

Start Date: 4/20/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/29/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: SEA

Date: 20160418

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D4766

D

110

0.00

110

CNC Bend 1

CNC Delta 100 Bender

Memo

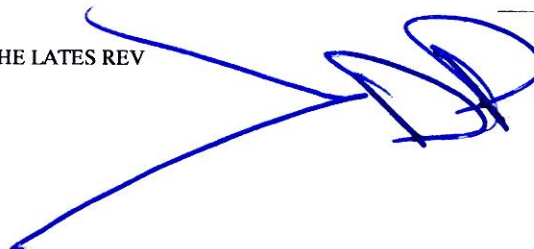
0.00

*****ROUTE NEED TO BE REVISE AS PER THE LATES REV
PROCESS*****

1- Bend FWD end as per dwg and folio

2- Cut FWD end as per dwg using DT8185

VERIFY MESUREMENT



16-4-18

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Work Order ID 144436

April 18, 2016 9:48:34 AM

144436

Page 2

Item ID: D4766-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Assembly

Start Date: 4/20/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/29/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00

120

Skidtubes

Skidtubes

Memo

0.00

1- Cut Aft end as per dwg D4766

2- Deburr ends

3-Drill Aft & Fwd Cap holes using DT8678 & DT8901***DO NOT OPEN AFT
CAP HOLES***4- Locate DT8678 with #30 electro in Ground wire hole, then Pilot Drill all X-
Bolt holes using #30" drill. & Drill Ground wire hole on top of Tube.

5- Open ground wire hole .297" (1) place and detail "L" (2) place.

6- Open Aft & Fwd Cap holes using 0.208" drill.

7- Deburr holes.

140

QC5- Inspect part completeness to step on W/O 0.00

140

QC

Memo

0.02

Quality Control

16-4-19

16-4-19

① 16-04-20

DAS

9

3-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 144436

April 18, 2016 9:48:35 AM

144436

Page 3

Item ID: D4766-041 **Accept** ***N900040100*** **Setup Start** ***NS1***
Revision ID: **Stop** ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 **Start Qty:** 1.00 ***1*** **Cust Item ID:**
Required Date: 4/29/2016 **Req'd Qty:** 1.00 ***1*** **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** ***NR1***
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Chemical Conversion Coat per QSI005 4.1	0.00							
150									
HandFinish	Memo	0.00							
Hand Finishing									
160	QC7-Inspect Chemical Conversion Coat	0.00							
160									
QC	Memo	0.01							
Quality Control									

16-4-20 *[Signature]*

16-4-20 *[Signature]*

DAS 03 9:28

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																							
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																							
Root Cause		FAULT CATEGORY																																																													
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :	
Misidentified ☐	Past Due ☐																																																														

Work Order ID 144436

April 18, 2016 9:48:35 AM

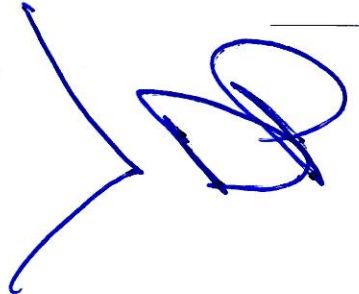
144436

Page 4

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Skidtubes	0.00							
170									
Skidtubes	Memo	0.00							
Skidtubes	1- Open holes to section H-H and prepare for welding as per dwg D4766 section H-H.								
	1- Bond web as per Dwg D4766 & QSI 015								
	A/R 241 Sike Flex Batch: <u>H134487</u>								
	Exp Date: <u>10-12-8</u>								
	start time: <u>1:00PM</u>								
	end time: _____								
180	QC5- Inspect part completeness to step on W/O	0.00							
180									
QC	Memo	0.02							
Quality Control									

 16-4-20
PTO 

DQA:

Date:

Jan 4 2017



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date:

DEC 13 2016

Work Order update only ☐

Work Order: <u>144436</u>		DISPOSITION		AGAINST DEPARTMENT/PROCESS			
Part No. <u>D4766-041</u>		Rework ☐	Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐	
NCR No. <u>16-6158</u>		Scrap ☒	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	
		Use-as-is ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	
		Suspected Unapproved ☐	Large Fab ☐	Composite ☐	Supplier ☐		
Date: <u>16-5-9</u>	Step #: <u>170</u>	QTY Effective: <u>1</u>				MRB (QSI042) Approval	
Description Work Order Deviation			Disposition				
w/o Sand prepare for welding. There is no welding as per drawing D4766 Revised R.C. route			Scrap ^{tube} remove I-Beam + Re-stock <u>B130107</u> QTY: 1 Remove welding operation on route.				
			Completed By: <u>DAS 9 16-05-12</u> Lead hand / Supervisor Approval Verification <u>DAS 9 9-89 16-05-12</u> QC / QA Coordinator Approval <u>DAS 9 9-89 16-05-12</u>				
Root Cause		FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐		
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐		
Doc/Data ☒	Offset/Setup ☐	Centre Not Concentric ☐	☒ BOM/Route	Grain ☐	Over/Under tolerance ☐		
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐		
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐		
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐		
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐		
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐		
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐		
Past Expiry Date ☐	Manufacturing Process ☐						
Misidentified ☐	Past Due ☐	OTHER :					

Work Order ID 144436

April 18, 2016 9:48:35 AM

144436

Page 5

Item ID: D4766-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Assembly

Start Date: 4/20/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/29/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

185

0.00

185

Skidtubes

Memo

0.00

Skidtubes

1- Bend aft tube as per dwg VERIFY HEIGHT

2- Remove bending marks.

3- Prepare and install D2973 spacer for welding as per dwg and section H-H
A/R Aluminum rod: _____

4- Grind weld flush and pass drill to remove spill over

5- Open X-Bolt holes to size as per Dwg D4766 and detail K

6- Drill Rivet Holes as per Dwg D4766 Using DT10065

7- Deburr Rivet holes.

8- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4766.

A/R Proseal Batch: _____

12H CURE TIME START TIME: _____

9- Swage x-bolt spacers as per Dwg D4766 and section D-D

10- Trim/Grind flush per QSI 002

11- Deburr and blow out chips from inside of tube.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Date :	Step #:	QTY Effective :	MRB (QSI042) Approval
--------	---------	-----------------	-----------------------

Description Work Order Deviation	Disposition	
		Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval

Root Cause	FAULT CATEGORY																																																																
<table style="width:100%; border: none;"> <tr><td style="border: none;">Environment ☐</td><td style="border: none;">☐ No Re-verification</td></tr> <tr><td style="border: none;">Design ☐</td><td style="border: none;">☐ Operator</td></tr> <tr><td style="border: none;">Doc/Data ☐</td><td style="border: none;">☐ Offset/Setup</td></tr> <tr><td style="border: none;">Equip/Tooling ☐</td><td style="border: none;">☐ Supplier</td></tr> <tr><td style="border: none;">Handling/Pre ☐</td><td style="border: none;">☐ Training</td></tr> <tr><td style="border: none;">Material ☐</td><td style="border: none;">☐ Use for Testing</td></tr> <tr><td style="border: none;">Internal Transport ☐</td><td style="border: none;">☐ Poor Information</td></tr> <tr><td style="border: none;">Tribal Knowledge ☐</td><td style="border: none;">☐ Rushing</td></tr> <tr><td style="border: none;">LOA ☐</td><td style="border: none;">☐ Product Improvement</td></tr> <tr><td style="border: none;">Substation ☐</td><td style="border: none;">☐ Process Improvement</td></tr> <tr><td style="border: none;">Past Expiry Date ☐</td><td style="border: none;">☐ Manufacturing Process</td></tr> <tr><td style="border: none;">Misidentified ☐</td><td style="border: none;">☐ Past Due</td></tr> </table>	Environment ☐	☐ No Re-verification	Design ☐	☐ Operator	Doc/Data ☐	☐ Offset/Setup	Equip/Tooling ☐	☐ Supplier	Handling/Pre ☐	☐ Training	Material ☐	☐ Use for Testing	Internal Transport ☐	☐ Poor Information	Tribal Knowledge ☐	☐ Rushing	LOA ☐	☐ Product Improvement	Substation ☐	☐ Process Improvement	Past Expiry Date ☐	☐ Manufacturing Process	Misidentified ☐	☐ Past Due	<table style="width:100%; border: none;"> <tr><td style="border: none;">☐ Pressure/Forced</td><td style="border: none;">☐ Temperature/Cure</td><td style="border: none;">☐ Power Loss/Surge</td><td style="border: none;">☐ Positioned Wrong</td></tr> <tr><td style="border: none;">☐ Bending</td><td style="border: none;">☐ Set-up</td><td style="border: none;">☐ Folio/Program</td><td style="border: none;">☐ Outside Dimensions</td></tr> <tr><td style="border: none;">☐ Centre Not Concentric</td><td style="border: none;">☐ BOM/Route</td><td style="border: none;">☐ Grain</td><td style="border: none;">☐ Over/Under tolerance</td></tr> <tr><td style="border: none;">☐ Cracks</td><td style="border: none;">☐ Broken/Damage/Defect</td><td style="border: none;">☐ Weld</td><td style="border: none;">☐ Part Incorrect</td></tr> <tr><td style="border: none;">☐ Crimp/Kink/Ripple/Wave</td><td style="border: none;">☐ Inspection Incomplete/Unqualified</td><td style="border: none;">☐ Wrong Stock Pulled</td><td style="border: none;">☐ Part Lost/Missing</td></tr> <tr><td style="border: none;">☐ Cuffs</td><td style="border: none;">☐ Contamination</td><td style="border: none;">☐ Out of Sequence</td><td style="border: none;">☐ Part Moved</td></tr> <tr><td style="border: none;">☐ Crushing</td><td style="border: none;">☐ Countersink</td><td style="border: none;">☐ Off-set</td><td style="border: none;">☐ Drawing</td></tr> <tr><td style="border: none;">☐ Heat Treat</td><td style="border: none;">☐ Cut Too Short</td><td style="border: none;">☐ Mislabeled</td><td style="border: none;">☐ Finish</td></tr> <tr><td style="border: none;">☐ Wave/Twist in Tube</td><td style="border: none;">☐ Instructions Incomplete/Unclear</td><td style="border: none;">☐ Fit/Function</td><td style="border: none;">☐ Misread</td></tr> <tr><td style="border: none;">☐ Marks/Chatter</td><td style="border: none;">☐ Drill Holes</td><td style="border: none;">☐ Misaligned/off center</td><td style="border: none;">☐ Turning Sequence</td></tr> </table>	☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong	☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved	☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing	☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish	☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread	☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence
Environment ☐	☐ No Re-verification																																																																
Design ☐	☐ Operator																																																																
Doc/Data ☐	☐ Offset/Setup																																																																
Equip/Tooling ☐	☐ Supplier																																																																
Handling/Pre ☐	☐ Training																																																																
Material ☐	☐ Use for Testing																																																																
Internal Transport ☐	☐ Poor Information																																																																
Tribal Knowledge ☐	☐ Rushing																																																																
LOA ☐	☐ Product Improvement																																																																
Substation ☐	☐ Process Improvement																																																																
Past Expiry Date ☐	☐ Manufacturing Process																																																																
Misidentified ☐	☐ Past Due																																																																
☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong																																																														
☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions																																																														
☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance																																																														
☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect																																																														
☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing																																																														
☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved																																																														
☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing																																																														
☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish																																																														
☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread																																																														
☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence																																																														
OTHER : ☐																																																																	

Work Order ID 144436

April 18, 2016 9:48:35 AM

144436

Page 6

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
188	QC5- Inspect part completeness to step on W/O	0.00							
188									
QC	Memo	0.02							
Quality Control									
210	Pressure Wash per QSI005 4.3	0.00							
210									
HandFinish	Memo	0.00							
Hand Finishing	Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.								
220		0.00							
220									
SprayPaint	Memo	0.00							
Spray Painting	1- Apply Primer as per QSI 005 4.2.1.3.3 and dwg A/R Primer Batch: _____								
	2- Paint White as per QSI 005 4.2.2.4 and dwg A/R Paint Batch: _____								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 144436

April 18, 2016 9:48:35 AM

144436

Page 7

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230 QC14- Inspect Spray Paint

0.00

230

QC

Memo

0.01

Quality Control

260

260

HandFinish

HandFinishing

0.00

Memo

0.00

Hand Finishing

1- Install Ground Wire inserts as per Dwg D4766.

2-Inspect for Foreign objects

3- Install Fwd & Aft caps as per Dwg D4766 and Detail "A" & "B". Fasterner must be install wet as per note (9).

A/R 241 Sika Flex Batch: _____
Exp Date: _____

4- Assemble o'ring to plug as per dwg D3492-055 and apply o'ring lube

A/R 55-o'ring lube batch: _____

5- Wing Walk as per Dwg D4766 and QSI 005 4.4

Batch: _____

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐				
Date : _____	Step #: _____	QTY Effective : _____			MRB (QSI042) Approval	
Description Work Order Deviation		Disposition				
					Completed By	
					Lead hand / Supervisor Approval Verification	
					QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
OTHER : ☐						

April 18, 2016 9:48:35 AM

Page 8

Setup Start *NS1*

Stop *NS2*

Customer:

Stop ***NR2***

0.00

0.02

Packaging

Quality Control

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause				FAULT CATEGORY			
Environment ☐	☐ No Re-verification	Pressure/Forced ☐	☐ Temperature/Cure	Power Loss/Surge ☐	☐ Positioned Wrong		
Design ☐	☐ Operator	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐		
Doc/Data ☐	☐ Offset/Setup	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐		
Equip/Tooling ☐	☐ Supplier	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐		
Handling/Pre ☐	☐ Training	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Material ☐	☐ Use for Testing	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐		
Internal Transport ☐	☐ Poor Information	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐		
Tribal Knowledge ☐	☐ Rushing	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐		
LOA ☐	☐ Product Improvement	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐		
Substation ☐	☐ Process Improvement	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐		
Past Expiry Date ☐	☐ Manufacturing Process	OTHER : _____					
Misidentified ☐	☐ Past Due						

Work Order ID 144436

April 18, 2016 9:48:35 AM

144436

Page 9

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
300 *300* Packaging Packaging	Identify as per dwg & Stock Location: _____ Packaging Memo	0.00 0.01				_____	_____	_____	_____
310 *310* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.10				_____	_____	_____	_____

 **DAS**
21
9-89 NOV 28 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																							
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																							
Root Cause		FAULT CATEGORY																																																													
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :	
Misidentified ☐	Past Due ☐																																																														

Picklist Print

April 18, 2016 9:48:39 AM

Page 1

Work Order ID: 144436

144436

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.04.17 NEW ISSUE DD VERF:JLM IPP REV:B
13.08.08 PB2 DD VERF:JLM IPP REV:C 13.08.26
PB3 DD VERF:JLM IPP REV:D 13.11.14 AS PER
DWG REV.B DD VERF:JLM IPP REV:E 15.06.10 AS PER DWG
REV.C DD VERF:JLM IPP REV:F 16.03.23 AS PER DWG REV.D
DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN526C1032R10		Purchased	No				Each	58.0000		2			

AN526C1032R10

Screw

Location

Loc Qty

Loc Code

ST328

58

m133234

58

D2962-190

Manufactured

No

Each

54.0000

D2962-190

Extrusion

Location

Loc Qty

Loc Code

HALL

11

100121

11

SHED

43

100121

43

D2965-3

Manufactured

No

Each

88.0000

D2965-3

Cap

Location

Loc Qty

Loc Code

FP001

88

126369

88

16-4-18

1

Picklist Print

April 18, 2016 9:48:39 AM

Page 2

Work Order ID: 144436

144436

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

D2973

Manufactured No

Each

6.0000

2

D2973

Cross Bolt Spacer

Location

Loc Qty

Loc Code

LG001

6

123939

6

D5085-1

Manufactured No

Each

6.0000

1

D5085-1

Web

Location

Loc Qty

Loc Code

LG

6

130107

6

D5304-1

Manufactured No

Each

17.0000

2

D5304-1

Crossbolt Spacer

Location

Loc Qty

Loc Code

prelim

17

137050

17

Picklist Print

April 18, 2016 9:48:39 AM

Page 3

Work Order ID: 144436

144436

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0332R

Purchased

No

Each

3,839.000

5

NAS1149C0332R

WASHER

Location

Loc Qty

Loc Code

FP001

2122

m132262

4

m132930

1004

m134063

986

m134073

128

GA

261

m133284

261

ST266

1456

m134474

456

m134574

1000

Each

60.0000

11

D4686-1

Manufactured

No

D4686-1

Spacer

Location

Loc Qty

Loc Code

LG001

45

107104

43

97772

2

LG002

15

131160

13

97772

2

Each

111.0000

22

D4753-1

Manufactured

No

D4753-1

Doubler

Location

Loc Qty

Loc Code

LG002

111

127246

9

128557

42

128887

60

April 18, 2016 9:48:39 AM

Shop Packet Print

Page 3

Picklist Print

April 18, 2016 9:48:39 AM

Page 4

Work Order ID: 144436

144436

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

AEELS-1032-130 AEELS8-1032-130 Purchased No

Each 0.0000 3

AFI S-1032-130

Rivnut

AN3C4A Purchased No

Each 1,031.000 3

AN3C4A

Bolt

Location

Loc Qty

Loc Code

FG 20

122814 20

FP001 73

M133440 7

M134396 66

OVER002 750

M134502 200

M134509 300

M134606 250

ST350 188

M134134 18

M134396 170

MS20601-AD4W3 Purchased No

Each 397.0000 44

MS20601-AD4W3

Rivet

Location

Loc Qty

Loc Code

LG001 98

m132551 98

ST308 299

m133922 99

m134370 200

Picklist Print

April 18, 2016 9:48:39 AM

Page 5

Work Order ID: 144436

144436

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

D2965

Manufactured No

Each

76.0000

1

D2965

Cap

Location

Loc Qty

Loc Code

FP001

76

127852

76

AN3C5A

Purchased

No

Each

1,233.000

2

AN3C5A

Bolt

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

172

M133686

172

OVER002

1000

M134502

1000

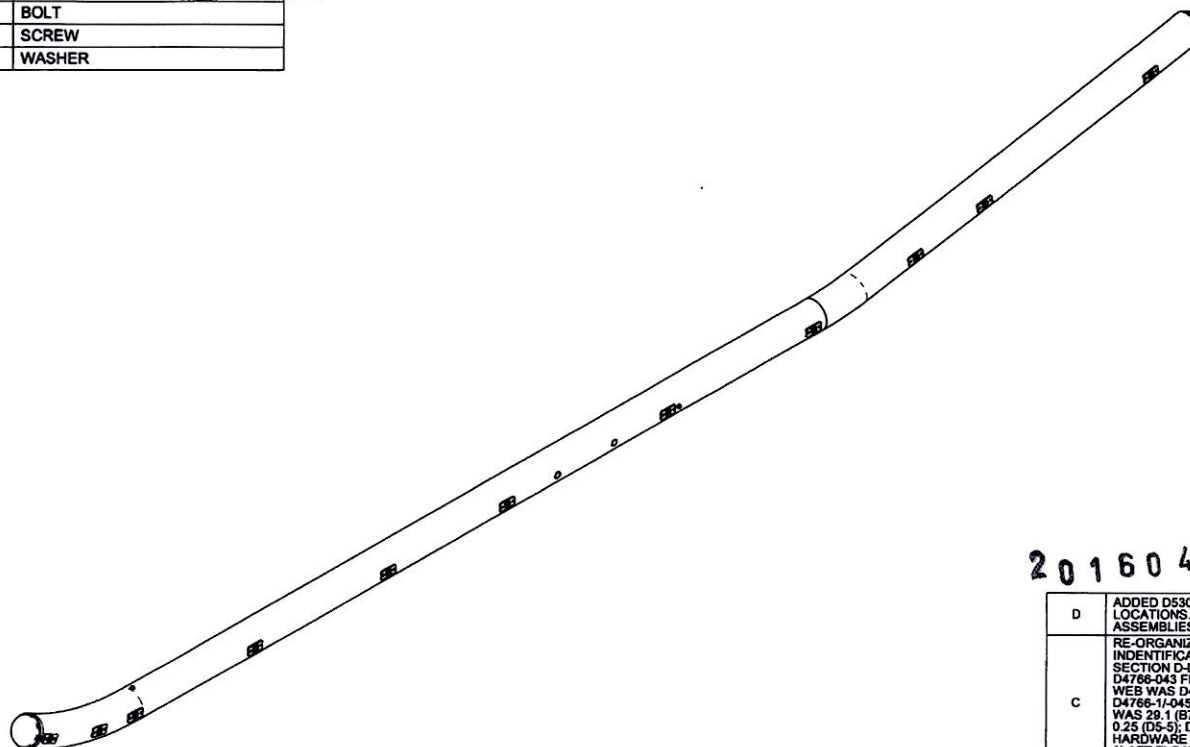
ST350

56

M133234

56

ITEM	QTY	P/N	DESCRIPTION
	X	D4766-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4766-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER



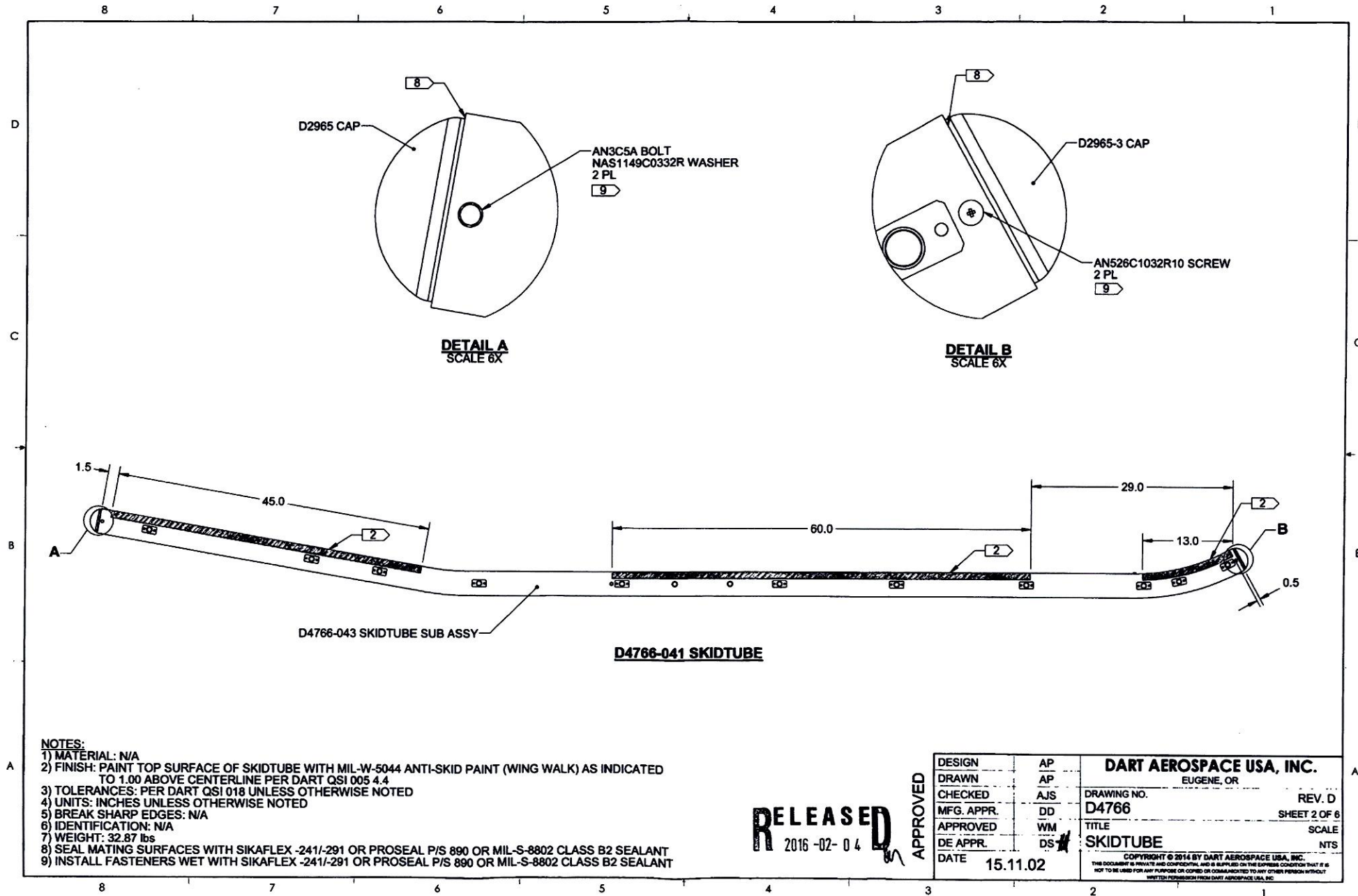
D4766-041 SKIDTUBE

20160418 SH144436

D	ADDED D5304-1 SWAGED CROSSBOLT SPACER FOR GHL LOCATIONS. ADDED SHT 1. REMOVED D3492-055 PLUS ASSEMBLIES. RE-ORDER SECTIONS	AP	15.11.02
C	RE-ORGANIZED SECTIONAL/DETAIL VIEWS ALL SHTS; IDENTIFICATION MOVED FROM SHT 1 TO SHT 5; SECTION D-D AND DETAIL K 11PL WAS 12PL; MODIFIED D4766-043 FINISH; Ø0.750 WAS Ø0.758 (B4-3); D5085-1 WEB WAS D4768-1; VARIOUS MINOR DIM CHANGES TO D4766-1/-045 TO MATCH STD SKIDTUBE PROFILE; 35.9 WAS 29.1 (B7-4); GROUNDING FASTENER MOVED AFT 0.25 (D5-5); D2965 HARDWARE AND GROUNDING HARDWARE CHANGED TO STAINLESS; ADD NOTE 9 (SHT 1) AFT FLOAT HOLES NOW DIMENSIONED AFTER AFT BEND	AP	15.02.25
B	FWD CAP WAS D2965 NOW D2965-3. D3492-055 WAS D3492-051. SWAGING NOW 0.650 WAS 0.651 (C7-2). ADDED BENDING DETAIL TO SHEET 4. MATERIAL D2962-190 WAS D2962-185 (A7-5). ADDED DETAIL L ON SHT 3. ADDED TOP VIEW ON SHT 5. REPLACED D4768-1 WITH D4927-041 ON SHT 3. GROUND HANDLING THRU HOLES SPACERS NOW WELDED. SEE SECTION H-H (B4-2). RE-ORDERED SECTIONS AND DETAILS.	AP	13.08.08
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR DRAWING NO. D4766 TITLE SKIDTUBE REV. D SHEET 1 OF 6 SCALE NTS COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	
DRAWN	AP		
CHECKED	AJS		
MFG. APPR.	DD		
APPROVED	WM		
DE APPR.	DS	DATE 15.11.02	

RELEASED
2016-02-04
EAW 16-514

APPROVED



NOTES:

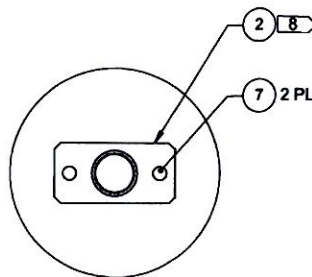
- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 32.87 lbs
- 8) SEAL MATING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

RELEASED
2016-02-04

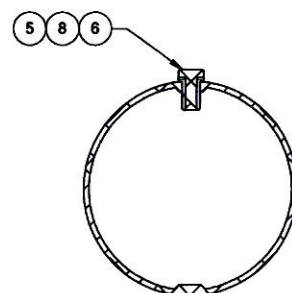
APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AP	EUGENE, OR	
CHECKED	AJS	DRAWING NO.	REV. D
MFG. APPR.	DD	D4766	SHEET 2 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	15.11.02	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC.	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS COVENANT THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.			

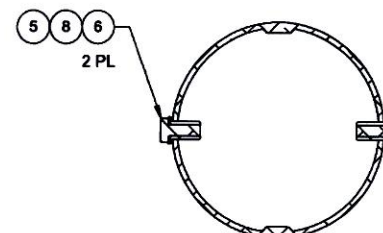
ITEM	QTY -043	P/N	DESCRIPTION
	X	D4766-043	SKIDTUBE SUB ASSY
1	11	D4686-1	SPACER
2	22	D4753-1	DOUBLER
3	1	D4766-045	SKIDTUBE SUB ASSY
4	2	D5304-1	CROSSBOLT SPACER
5	3	AELS-1032-130	INSERT
6	3	AN3C4A	BOLT
7	44	MS20601AD4W3	RIVET, BLIND, CSK
8	3	NAS1149C0332R	WASHER



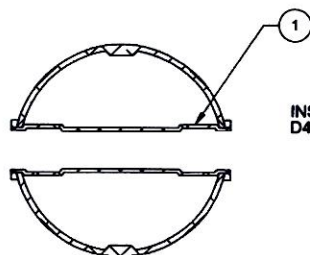
DETAIL E
SCALE 6X
22 PL



SECTION D-D
SCALE 6X



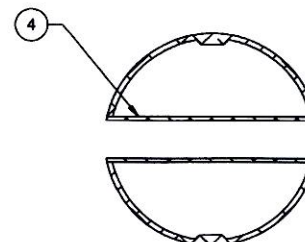
SECTION F-F
SCALE 6X



SECTION C-C
SCALE 6X
11 PL

INSTALL D4686-1 SPACER AFTER INSTALLING
D4753-1 DOUBLERS AS FOLLOWS (11 PL)

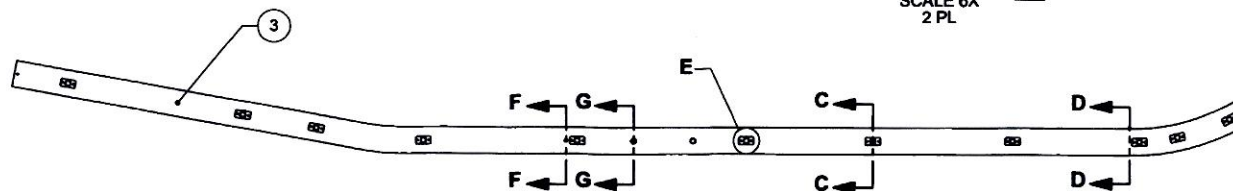
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000$ X 1.0 DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002



SECTION G-G
SCALE 6X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.565 +0.005/-0.000$ X 1.0 DP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$



D4766-043 SKIDTUBE SUB ASSY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 31.69 lbs
- 8) SEAL FAYING SURFACES USING PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

RELEASED
2016-02-04

APPROVED

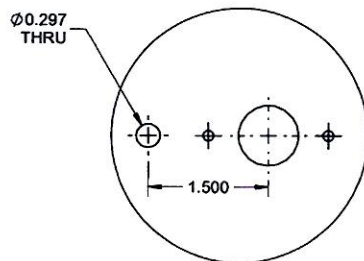
DESIGN	AP
DRAWN	AP
CHECKED	AJS
MFG. APPR.	DD
APPROVED	WM
DE APPR.	DS
DATE	15.11.02

DART AEROSPACE USA, INC.
EUGENE, OR

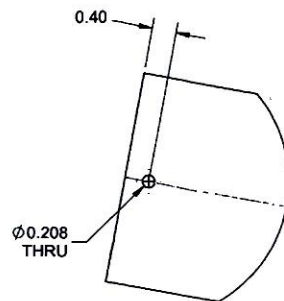
DRAWING NO.
D4766
TITLE
SKIDTUBE
REV. D
SHEET 3 OF 6
SCALE
NTS

COPYRIGHT © 2014 BY DART AEROSPACE USA, INC.
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS
NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT
WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

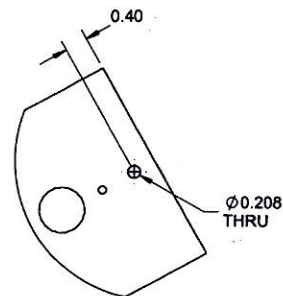
ITEM	QTY	P/N	DESCRIPTION
	X	D4766-045	SKIDTUBE SUB ASSY
1	1	D4766-1	SKIDTUBE
2	1	D5085-1	WEB



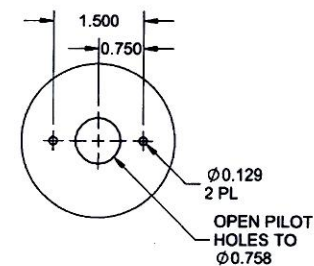
DETAIL I
SCALE 4X



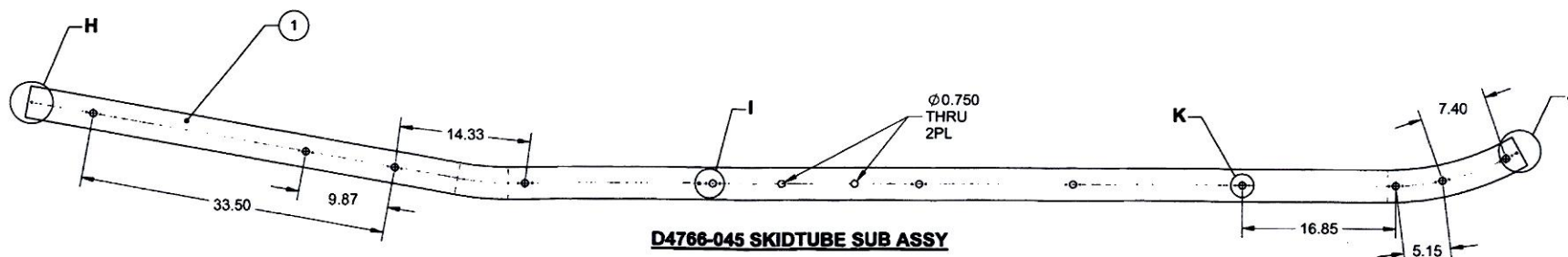
DETAIL H
SCALE 6X



DETAIL J
SCALE 6X



DETAIL K
11 PL (BOTH SIDES)
SCALE 6X



D4766-045 SKIDTUBE SUB ASSY

NOTES:

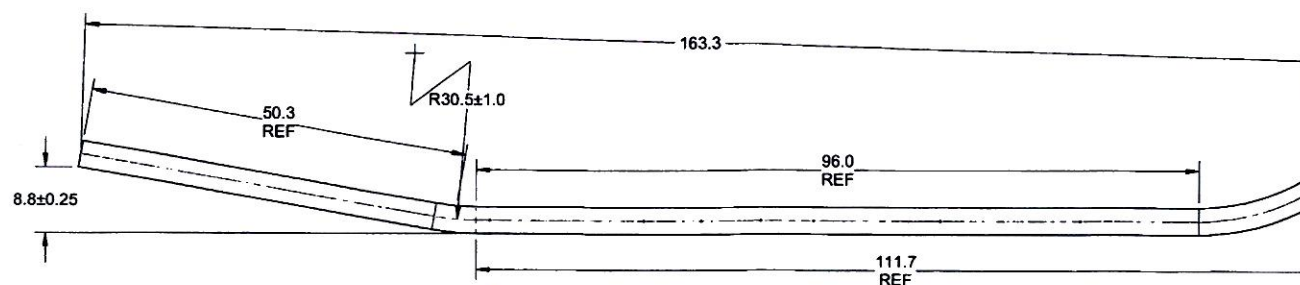
- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 31.69 lbs

RELEASED
2016-02-04

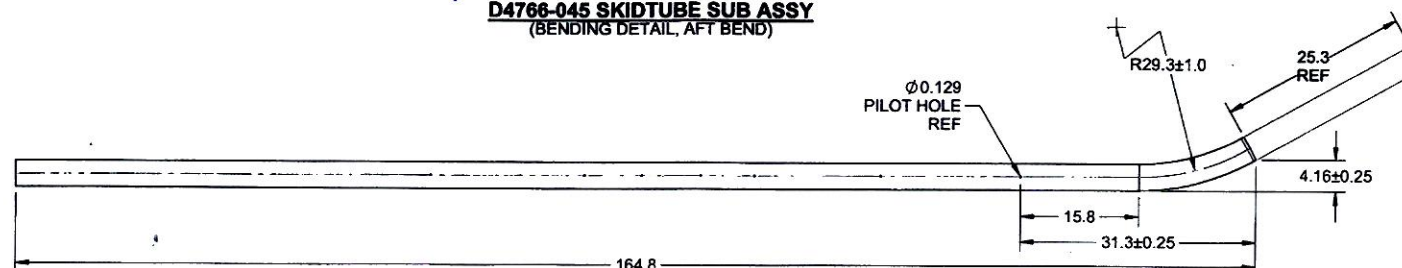
APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.
DRAWN	AP	EUGENE, OR
CHECKED	AJS	DRAWING NO.
MFG. APPR.	DD	D4766
APPROVED	WM	TITLE
DE APPR.	DS	SKIDTUBE
DATE	15.11.02	SCALE
		NTS

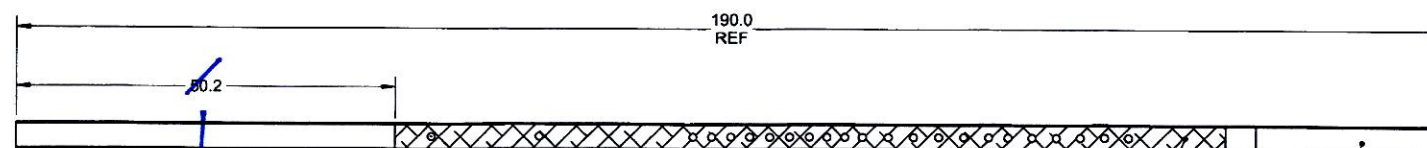
COPYRIGHT © 2014 BY DART AEROSPACE USA, INC.
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS
NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT
WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, AFT BEND)



D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, FWD BEND)



D4766-045 SKIDTUBE SUB ASSY
(ASSEMBLY DETAIL)

35.877
± 0.1
DAS
12 16/4/29
989

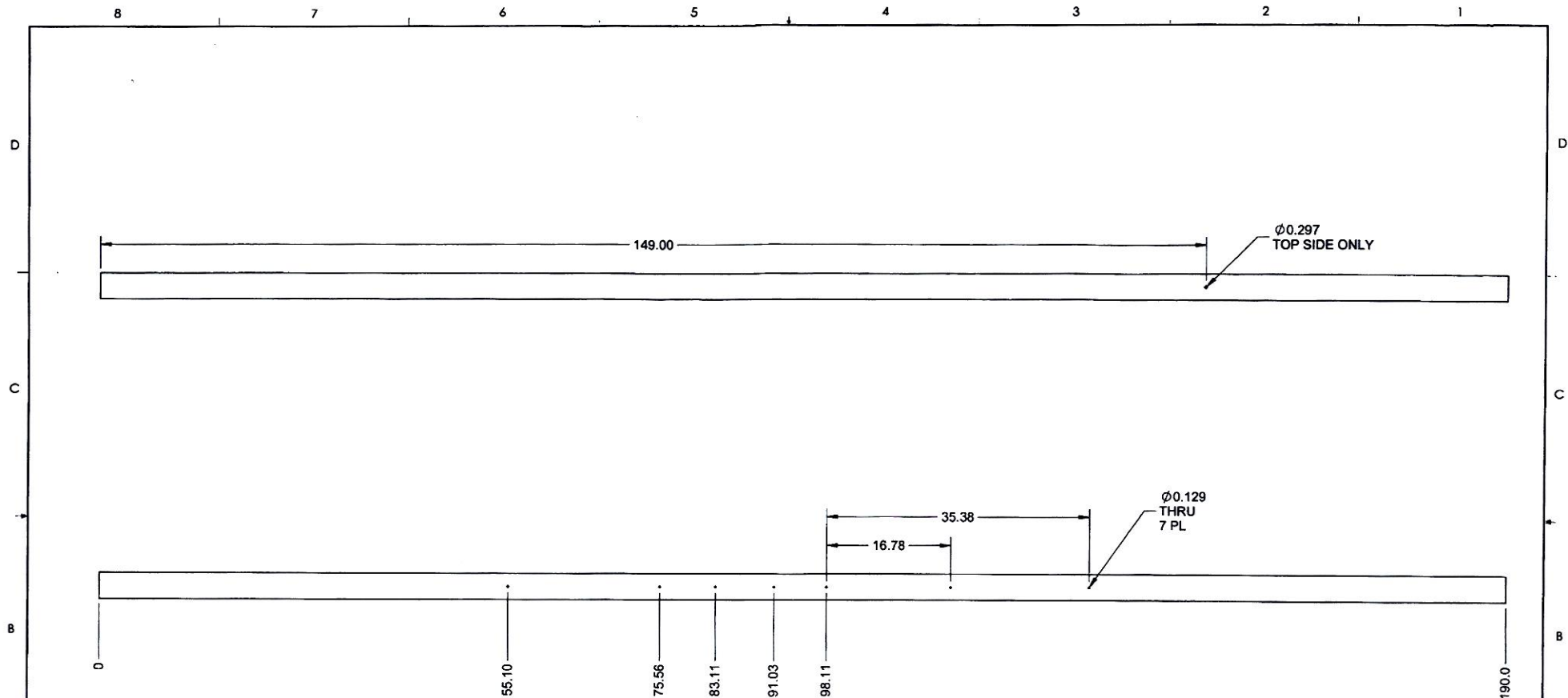
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) INSERT D5085-1 WEB INTO D4766-1 EXTRUSION IN LOCATION SHOWN AND BOND INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/291 ADHESIVE PER DART QSI 015.

RELEASED
2016-02-04

APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AP	EUGENE, OR	
CHECKED	AJS	DRAWING NO.	REV. D
MFG. APPR.	DD	D4766	SHEET 5 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	15.11.02	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



D4766-1 SKIDTUBE

NOTES:

- 1) MATERIAL: MAKE FROM D2962-190 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF AFT END OF SKIDTUBE
- 7) WEIGHT: 18.97 lbs

RELEASED
2016-02-04

APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AP	EUGENE, OR	
CHECKED	AJS	DRAWING NO.	REV. D
MFG. APPR.	DD	D4766	SHEET 6 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	15.11.02	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	